

**REMARKS/ARGUMENTS**

Re-examination and favorable reconsideration in light of the above amendments and the following comments are respectfully requested.

Claims 1 - 5, 7 - 10, and 14 - 55 are pending in the application. Currently, claims 1 - 5, 7 - 10, 15 - 17, 19 - 21, 27, 29, 44, 45, and 47 - 55 have been allowed; and claims 14, 18, 22 - 26, 28, 30 - 43, and 46 have been rejected.

By the present amendment, claims 1 has been amended to correct typographical errors and not for purposes of patentability. Further, claims 14, 18, and 28 have been amended to overcome the indefiniteness rejection and claim 46 has been amended to clarify the claimed invention. Still further, claims 22, 25, 30, 33, 35, 36, 38 - 42, and 46 have been amended and claims 31, 32, and 34 have been cancelled.

In the office action mailed December 12, 2005, claims 14, 18, and 28 were rejected under 35 U.S.C. 112, second paragraph; claim 46 was rejected under 35 U.S.C. 102(e) as being anticipated by U.S. Patent No. 6,844,075 to Saak et al.; claims 25, 26, 28, and 29 were rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 6,258,467 to Subramanian in view of U.S. Patent No. 6,558,814 to Spitsberg; claims 22, 23, and 24 were rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 6,812,176 to Zhu et al. in view of the Spitsberg patent; claims 25, 26, 28, 30 - 37, and 39 - 43 were rejected under 35 U.S.C. 103(a) as being unpatentable over the Kondo et al. patent of record in view of Spitsberg; claim 30 is rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 4,774,150 in view of Spitsberg; claims 31 and 32 were rejected under 35 U.S.C. 103(a) as being unpatentable over the Dorfman et al. reference of

record in view of Spitsberg; and claims 33, 34, and 38 were rejected under 35 U.S.C. 103(a) as being unpatentable over the Maloney patent of record in view of Spitsberg.

The foregoing rejections are traversed by the present response.

The rejection of claims 14, 18, and 28 under 35 U.S.C. 112, second paragraph, is now moot in view of the amendments to these claims.

With respect to the rejection of claim 46 on anticipation grounds over Saak et al., this claim is allowable because Saak et al. does not teach or suggest a bond coat layer formed by  $Ta_2O_5$ . The bond coat in Saak et al. is formed from silicon. As to the intermediate layer in Saak et al., this layer is formed by at least one of tantalum aluminate and niobium aluminate. It is well settled law that in order to anticipate a claim, a reference must disclose all limitations of the claim either expressly or inherently. Saak et al. does not expressly disclose the claimed bond layer. Also, it does not inherently disclose the claimed bond layer. As noted by the Examiner in the rejection, "there may be excess tantala present in the coating." Anticipation however can not be established on mere probabilities or possibilities. This rejection should be withdrawn.

With respect to the rejection of claims 25, 26, 28, and 30 over the combination of Subramanian in view of Spitsberg et al., claim 25 relates to a thermal barrier coating consisting of from 0.5 to 22.5 mol% of at least one first oxide having a formula  $A_2O_3$  where A is selected from the group consisting of La, Tb, Tm, and Lu combined with a second oxide selected from the group consisting of zirconia, hafnia, and ceria. Subramanian does not teach or suggest at least one first oxide as set forth in the

claimed amount and the claimed constituents. There is no disclosure in Subramanian of any first oxide compositional constituent being present in an amount other than 33 mol%. The Examiner keeps referring to the example as showing a range of 33 mol% or less, yet Applicants can not find any such teaching in the example. The Examiner is respectfully requested to specifically point out where this teaching is present. Also, the Examiner is respectfully requested to point where the word "less" would lead one of ordinary skill in the art to use a range of from 0.5 to 22.5 mol%. The Spitsberg et al. patent is cited as teaching that a thermal barrier coating may be applied to both ceramic matrix composite substrates as well as superalloy substrates. Spitsberg et al. does not cure the aforementioned deficiency in Subramanian. Therefore, for these reasons, claim 25, as well as claim 26, is allowable.

With respect to the rejection of claim 28 as being unpatentable over Subramanian in view of Spitsberg et al., this claim is allowable for the same reasons as claim 25. This claim is also allowable because the coatings in Subramanian lack the claimed at least one third oxide and Spitsberg et al. does not cure this deficiency.

With respect to the rejection of claim 30, this claim is allowable because Subramanian does not teach or suggest the claimed at least one first oxide in the amount set forth in the claim. As discussed above, Subramanian does not teach or suggest any compositional amount less than 33 mol%. Subramanian is totally silent on the point. Still further, Subramanian lacks the claimed at least one third oxide in combination with the other claimed constituents. Spitsberg et al. does not cure these deficiencies in Subramanian.

With regard to the rejection of claims 22 - 24 over the combination of Zhu et al. and Spitsberg et al., claim 22 has been amended to exclude yttrium oxide, dysprosium oxide, and erbium oxide. The Zhu et al. reference is directed to a composition having a mandatory primary stabilizer selected from the group consisting of yttrium oxide, dysprosium oxide, and erbium oxide. Thus, it does not teach or suggest the thermal barrier coating set forth in claim 22. Spitsberg et al. does not cure the deficiencies of Zhu et al. For these reasons, claim 22 is allowable. Claims 23 and 24 are allowable for the same reasons as claim 22, as well as on their own accord.

With regard to the rejection of claims 25, 26, 28, 30 - 37, and 39 - 43 over the combination of Kondo et al. in view of Spitsberg et al., these claims are all allowable because none of them refer to a thermal barrier coating containing zirconia. The primary reference to Kondo et al. is directed to a vapor deposited material which is a sintered body of zirconia containing a stabilizer. Zirconia is an essential constituent in Kondo et al. Spitsberg et al. does not teach or suggest the claimed thermal barrier coatings. It is cited for other reasons. Thus, even if the references were combined, they would not arrive at the inventions set forth in claims 25, 26, 28, 30 - 37, and 39 - 43.

With regard to the rejection of claim 30 over the combination of Amano et al. in view of Spitsberg, the Amano et al. patent relates to a thermal barrier coating which contains zirconia amongst other materials. Claim 30 has been amended to delete any reference to zirconia. Spitsberg et al. does not teach or suggest the claimed thermal barrier coatings. It is cited for other reasons. Thus, even if the references were

combined, they would not arrive at the thermal barrier coating set forth in amended claim 30.

The rejection of claims 31 and 32 over the combination of Dorfman et al. in view of Spitsberg et al. is now moot in view of the cancellation of these claims.

With respect to the rejection of claims 33, 34, and 38 over the combination of Maloney in view of Spitsberg et al., claims 33 and 38 have both been amended to delete any reference to gadolinia. The Maloney patent relates to a ceramic material having utility as a thermal barrier coating, which ceramic material contains gadolinia and hafnia. Thus, Maloney does not teach or suggest the thermal barrier coating compositions claimed in claims 33 and 38. Spitsberg et al. does not cure this deficiency in Maloney. Thus, amended claims 33 and 38 are allowable over this combination of references.

For the foregoing reasons, the instant application is believed to be in condition for allowance. Such allowance is respectfully solicited.

Should the Examiner believe an additional amendment is needed to place the case in condition for allowance, she is hereby invited to contact Applicants' attorney at the telephone number listed below.

No fee is believed to be due as a result of this response. Should the Director determine that an additional fee is due, he

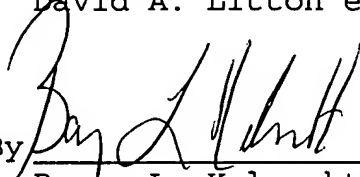
Appl. No. 10/803,527  
Amdt. dated March 13, 2006  
Reply to office action of Dec. 12, 2005

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is hereby authorized to charge said fee to Deposit Account No.  
21-0279.

Respectfully submitted,

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I, Nicole Motzer, hereby certify that this correspondence is being deposited with the United States Postal Service with sufficient postage as first class mail in an envelope addressed to: "Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313" on March 13, 2006.

